UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

Cambridge.—Applications to occupy the Cambridge table at the Naples Zoological Station should be sent to Prof. Newton on or before May 26.

Mr. S. F. Harmer has been approved by the Senate, on the recommendation of the Special Board of Medicine, as a teacher of Comparative Anatomy for the purposes of medical study.

The reports of Mr. H. Gadow, M.A., of King's College, and Mr. M. C. Potter, M.A., of Peterhouse, to whom grants were made from the Worts Travelling Scholars Fund last year, have just been published.

Mr. Gadow states that he began his researches on July 2, 1886, with the exploration of several caves on the Monte Junto and in the Serra de Athouguia, Province of Estremadura. In the caves were found a considerable number of human and other bones, many of which show unmistakable signs of being worked and cut by prehistoric man; they are now in the Museum of Zoology, awaiting further investigation. Fourteen celts, some worked flakes, and a flint arrowhead, collected in the caves or in the neighbourhood thereof, are now in the Museum of Archæology.

Mr. M. C. Potter joined Dr. Gadow on August 14 at Porto, and immediately went in search of *Clemmys caspica* (the water tortoise which bears the Alga); finding this tortoise was scarce in the North of Portugal, they went to Santarem, where it also was not procurable in sufficient numbers. They therefore proceeded to the Eastern Alemtejo to the mines of São Domingos; here, during several successful expeditions, they succeeded in obtaining a great number of *Clemmys caspica*, and with them a good supply of the parasitical Alga. At the mines of Sao Domingos, Mr. Potter was able to carry on his investigations through the kindness of his friend Mr. T. Warden, who placed his house at his disposal. The results have already been published in a preliminary form in the Proceedings of the Cambridge Philosophical Society, and will probably be published in full by the Linnean Society of London. To this Alga, hitherto undescribed, he has given the name of *Epiclemmidia lusitanica*, thus describing its nature and to some extent its geographical distribution. The expedition was of great value in enabling him to study the geographical distribution of many plants, and to collect specimens for the Botanical Museum, especially at Coimbra, where the Scientific Staff of the University presented both gentlemen with many valuable specimens.

SCIENTIFIC SERIALS.

Botanische Jahrbücher (A. Engler), vol. viii. Part 3.—On the history of development of form in the Roburoid Oaks, by Franz Krasan (two plates). The author points out, among other conclusions drawn from a comparison of ancient and modern forms, that the developmental series of forms of Oak extending continuously over immeasurable periods of time is compendiously summarised before our eyes in the development of the individual, *i.e.* that the ontogeny is an epitome of the phylogeny.—On *Eria chonéana*, a new species, by Fr. Kränzlin.—Descriptions of Lehmann's collections in Guatemala, Costa Rica, and Columbia: Cyperaceæ, by O. Böckeler; Liliaceæ, Hæmodoraceæ, Amaryllidaceæ, Dioscoreaceæ, and Iridaceæ, by J. G. Baker; Passifloraceæ and Aristolochiaceæ, by Maxwell T. Masters; Lythraceæ, by E. Kœtner.—The Hungarian species of *Inula*, especially those of the *Enula* group, by Vincentius de Borbás.—The remainder of this number is taken up by the continuation of Dr. Winter's excellent epitome of the recent literature on the classification and geographical distribution of fungi, and by Dr. F. von Herders' article on new contributions to the geographical botany of Russia.—Notice is also given in this number of the joint work by Profs. Engler and Prantl, to be entitled "Die natürlichen Pflanzenfamilien." This will be a very comprehensive, profusely-illustrated work, while the names under which it is to be issued will be sufficient guarantee of its excellence.

The principal article in the current number (vol. v. Part ii.) of the *Folk-Lore Journal* is the continuation of Miss Courtney's paper on Cornish folk-lore, which is very exhaustive. Mr. Kirby calls attention to five tales in the "Arabian Nights," which, though differing greatly from each other, are all based upon two simple fundamental ideas, viz. a door which it is forbidden to open, and the hero falling in love with a woman seen from a house-top. The five tales which are examined lead by curious gradations from the simplest form of the story to the most complex. In response to an appeal issued by the local Secretary in Hong Kong to dwellers in the Far East, we get several Chinese and Japanese contributions. The most important of these relates to the folk-lore of aboriginal Formosa, and is written by Mr. G. Taylor, whose papers on Formosa and its aborigines in the *China Review* were noticed several times last year in these columns. From Formosa, as elsewhere in the world, the cry comes that the aborigines are either disappearing, or are becoming sophisticated by their contact with civilised races. "Come quickly, or you will be too late," says Mr. Taylor to inquirers. He is certainly losing no time in making the most of his opportunities as a resident, and it is to be hoped he will continue his researches. Mrs. Mansfield supplies some interesting Chinese superstitions respecting children; and Mr. Hartland writes on the somewhat hackneyed subject of Japanese New Year decorations. The late Mrs. Chaplin Ayrton almost exhausted this subject in a paper read about ten years ago before the Asiatic Society of Japan, and reproduced by her a few years later in a charming book on child-life in Japan. The other papers, dealing with Negro songs in Barbados, and American song-games and wonder-tales, show that this interesting Society is extending the area of its activity so as to include all parts of the globe. Cornwall, Arabia, Formosa, Barbados, the United States, Japan, do not form a bad assortment for a single number of this journal.

SOCIETIES AND ACADEMIES.

London.

Physical Society, April 23.—Prof. W. G. Adams, Vice-President, in the chair.—The following papers were read:—On delicate calorimetrical thermometers, and on expansion of thermometer-bulbs under pressure, by Prof. Pickering. The reading of a delicate mercurial thermometer, when placed in a bath at constant temperature, is found to depend on whether the thermometer was at a higher or lower temperature than the bath, before immersion. Capillarity was suggested as an explanation, but experiment showed that the effect was not always greatest at the narrow parts of the tube, and hence this idea was discarded. By using the same tube with different bulbs attached, the differences varied, and eventually the effect was found to be caused by exposing the inside of the tube to air and moisture; for when bulbs were attached to new tubes, without being so exposed, the differences between the rising and falling readings disappear. Hence, for very delicate thermometers great care should be taken not to expose the bore of the tube, and calibration of a tube before attaching the bulb must not be attempted. Even in the best tubes, after every possible precaution has been taken, the author finds some parts about which the mercury appears to stick, and in delicate observations these parts of the tube are to be avoided. He also finds it necessary to gently tap the top of the tube to relieve any friction, and has devised a clockwork arrangement for performing the operation uniformly. In the second part of the paper the author describes the want of concordance between the thermometers which have been compared with the same standard, and finds it due to the expansion of the bulbs not being in all cases proportional to the difference of pressure between the inside and outside. Thermometers with large thin bulbs show greatest discrepancies, and the remedy is found to be in making the bulbs more rigid. This is done by having a double bulb, making them from a cylindrical tube instead of by blowing, and increasing the thickness of the walls of the bulb. A knife-edge arrangement in the upper part of a thermometer is described, by which the same part of the graduated tube can be used, whatever the temperature (about which small changes are to be observed) may be. The proper amount of the mercury column can be cut off with the greatest nicety by its use. Mr. Whipple remarked that phenomena similar to those described in the paper were constantly coming under his notice, and mentioned the pressure-corrections they were applying to thermometers used *in vacuo*, during some pendulum experiments at present being carried out. He also described the Kew method of determining the pressure-correction in deep-sea thermometers, which are protected by an outer glass jacket filled with alcohol. Mr. Lant Carpenter described the first comparison experiments made at sea with protected and unprotected bulb thermometers. In answer to questions, Prof. Pickering said the range of pressure used was from 0 to 3 atmospheres, and in his most delicate thermometer, where 200 millimetres correspond to 1° C., the difference between readings taken in horizontal and vertical positions amounts to 30 millimetres.—Note on magnetisation; on sequences of reversals, by Mr. R. H. M. Bosanquet. Some experiments have recently been made on an iron bar whose magnetic properties under reversals with ascending values of current were first determined some years ago. The magnetic resistances have again been determined, first with ascending values of current, and afterwards with descending values. In all cases the induction was measured by reversing the current. The results generally show a greater magnetic resistance for descending values of current, except for small inductions where the resistance was less, when the experiments were performed in the above order. The paper concludes with a molecular hypothesis to explain the above results.—On a thermo-dynamical relation, by Prof. Ramsay and Dr. S. Young. The paper is an extension of one presented to the Society on February 26, and of which an abstract was read by the Secretary. The numerical results are given, from which the authors deduce the relation $p = bt - a$, for constant volume, and additional reasons are given for believing acetic acid (whose vapour-density at ordinary temperatures is abnormal) to be a mixture of $C_2H_4O_2$ and $C_4H_8O_4$, the former preponderating as the temperature rises. The authors ask the Society for a name to designate lines connecting pressure and temperature at constant volume, and for which they suggested "*isochor*" in their previous paper.

Zoological Society, April 19.—Mr. Osbert Salvin, F.R.S., Vice-President, in the chair.—The Secretary called attention to a set of eleven photographs representing the principal objects of natural history collected by the celebrated traveller Prjevalsky, during his four expeditions into Central Asia, and to an accompanying catalogue of them which had been presented to the Society's library by Dr. A. Strauch, of the Imperial Museum, St. Petersburg.—Mr. T. D. A. Cockerell exhibited and made remarks on some specimens of rare British slugs taken at Isleworth, Middlesex.—The Secretary read some extracts from a letter addressed to him by Mr. A. A. C. Le Souef, giving an account of a successful attempt to keep the duck-billed *Platypus*, or water-mole, alive in captivity in the Zoological Gardens at Melbourne.—Mr. J. Bland Sutton exhibited some specimens of diseased structures taken from mammals that had died in the Society's Gardens, and made comments thereon.—Mr. J. Bland Sutton read a paper on the singular arm-glands met with in various species of the family Lemuridæ.—Mr. F. E. Beddard read a paper on the anatomy of earthworms, being a further contribution to his researches on that subject.—A communication was read from Mr. A. D. Bartlett, Superintendent of the Society's Gardens, containing remarks upon the mode of moulting of the Great Bird of Paradise (*Paradisea apoda*), as observed in a captive specimen.—A communication was read from Mr. J. Douglas Ogilby, of the Australian Museum, Sydney, containing the description of a rare Australian fish (*Girella cyanea*).—A second paper by Mr. Ogilby contained the description of an undescribed fish of the genus *Prionurus*, obtained in Port Jackson, which was proposed to be called *Prionurus maculatus*.

Chemical Society, March 30.—Annual General Meeting.—Dr. Hugo Müller, F.R.S., President, in the chair.—The President delivered an address, some extracts from which we have already printed.—Prof. Odling proposed that the thanks of the meeting be given to the President for his address, and that he be requested to allow it to be printed. This motion was seconded by Dr. Gladstone, and accepted with acclamation by the Fellows present. The President acknowledged the compliment.—Dr. A. K. Miller and Dr. Rideal were appointed scrutators, and a ballot having been taken, the following were declared elected as Officers and Council for the ensuing year:—President: W. Crookes, F.R.S. Vice-Presidents who have filled the office of President: Sir F. A. Abel, C.B., F.R.S.; Warren De La Rue, F.R.S.; E. Frankland, F.R.S.; J. H. Gilbert, F.R.S.; J. H. Gladstone, F.R.S.; A. W. Hofmann, F.R.S.; H. Müller, F.R.S.; W. Odling, F.R.S.; W. H. Perkin, F.R.S.; Sir Lyon Playfair, K.C.B., F.R.S.; Sir H. E. Roscoe, F.R.S.; A. W. Williamson, F.R.S. Vice-Presidents: J. Dewar, F.R.S.; David Howard; H. McLeod, F.R.S.; Ludwig Mond; C. Schorlemmer, F.R.S.; W. A. Tilden, F.R.S. Secretaries: H. E. Armstrong, F.R.S.; J. Millar Thomson. Foreign Secretary: F. R. Japp, F.R.S. Treasurer: W. J. Russell, F.R.S. Ordinary Members of Council: Messrs. T. Carnelley, M. Carteighe, A. H. Church, Frank Clowes, P. F. Frankland, R. J. Friswell, E. Kinch, R. Messel, H. F. Morley, J. A. R. Newlands, W. Ramsay, Thomas Stevenson.

April 7.—Mr. William Crookes, F.R.S., President, in the chair.—The following papers were read:—Researches on the constitution of azo- and diazo-derivatives; II. Diazoamido-compounds (continued), by Mr. R. Meldola, F.R.S., and Mr. F. W. Streatfeild.—Conjugated sulphates and isomorphous mixtures of the copper-magnesium group, by Mr. P. C. Roy.—Suboxide of silver, Ag_4O, by Mr. G. H. Bailey and Mr. G. J. Fowler.—Action of trimethylenebromide on the sodium compounds of ethylic acetoacetate, benzoylacetate, paranitrobenzoylacetate, and acetonedicarboxylate, by Dr. W. H. Perkin, Jun.

Institution of Civil Engineers, April 19.—Mr. Edward Woods, President, in the chair.—Four papers were read on the subject of obtaining water-supply from wells, namely, chalk springs in the London Basin, by Mr. J. W. Grover; borings in the chalk at Bushey, Herts, by Mr. William Fox; on a borehole in Leicestershire, by Mr. T. S. Stooke; and the wells and borings of the Southampton Waterworks, by Mr. William Matthews.

PARIS.

Academy of Sciences, April 25.—M. Janssen, President, in the chair.—Remarks on M. Colladon's note of April 18, by M. Faye. In reply to M. Colladon's statement that his observations had reference to whirlwinds and waterspouts and not to cyclones or tornadoes, the author points out the great analogy that exists between these two orders of phenomena, both being descending vortices with vertical axis originating in the upper atmospheric regions. The essential difference is that the cyclones are much larger, and that their movement takes its rise at a much higher elevation; but both are subject to the same laws, while it is quite impossible to separate waterspouts from tornadoes.—Experiments for determining the coefficient of nutritive and respiratory activity of the muscles at work and in repose, by M. A. Chauveau and M. Kaufmann. Here a solution is attempted of the physiological problem, to determine for a given weight of living muscular tissue and for all the normal and regular physiological conditions of such tissue (1) the quantity of blood flowing through it in a given time for purposes of nutrition; (2) the weight of oxygen absorbed by this tissue, and of the carbonic acid secreted by it in the same time; (3) the weight of the substances which supply the carbon contained in the carbonic acid gas.—On a new species of truffle, by M. Ad. Chatin. It is shown that the truffle produced in Champagne and Burgundy is not the common species known as *Tuber rufum* and *T. æstivum*, but another hitherto undescribed variety here specified and named *Tuber uncinatum*.—Remarks on a thunderbolt of an unusually destructive character, by M. Daniel Colladon. An electric discharge is described which occurred on April 7 at Schoren in the Canton Bern, and which, after striking a large poplar, spread havoc for some hundreds of metres around, comparable to the effects caused by the explosion of a powder magazine. The shock was felt in Langenthal, three-quarters of a mile off, where several windows in a house were smashed.—On acute pneumonia, by M. Jaccoud. The observations here described establish the fact that true pneumonia is due not to the accidental penetration of specific microbes into the system, as is usually supposed, but to the development under favourable conditions of microbic germs permanently present in the system. A chief condition of such development is a sudden chill, which explains the frequent coincidence of lung affections with abrupt changes of temperature.—Note on the method of research for determining the correlation between two orders of facts, by M. de Montessus. The reference is to M. de Parville's recent paper on the correlation between earthquakes and lunar declination. The difficulty of correlating such phenomena is commented upon, which sufficiently accounts for the failure of the numerous attempts hitherto made to establish a distinct relation between the movements of the moon and those of the terrestrial crust. Such a relation would be equivalent to an experimental demonstration of the hypothesis which assumes that the centre of the earth is in a fluid state.—On the earthquake of February 23, 1887, by M. Albert Offret. With the data supplied from the various localities affected, an attempt is here made accurately to determine the moment when the shock reached the different points in the central part of the seismic area. The results are shown in two separate tables for France and Italy.—Expansion and compressibility of water, and displacement of the maximum of density by pressure, by M. E. H. Amagat. The author has carried his experiments on water as far as 3200 atmospheres, operating between 0° and 50° C. as limits of temperature, with the general result that a sufficient increase of pressure and temperature tends to bring water within the normal condition of other fluids. Towards 3000 atmospheres the last traces disappear of the perturbations of the general laws resulting from the existence of the maximum of density.—Isogonic magnetic curves, by M. C. Decharme. The author endeavours to show by a series of diagrams the double magnetic influence to which the needle is subjected in the vicinity of a magnet.—A study of the alkaline vanadates (continued), by M. A. Ditte. Here are examined the vanadates of lithine, to which is appended a general table of the well-defined crystallized salts yielded by potassa, soda, ammonia, and lithine.—Artificial production of magnetite, by M. Alex. Gorgeu. By the process here described a magnetic oxide is obtained apparently identical with natural magnetite. It is attracted by the magnet, shows a metallic lustre, and affects opaque octahedral forms, sometimes modified by minute facets of the rhomboidal dodecahedron, with hardness from 6 to 6·5, and density 5·21 to 5·25.—Qualitative study of the sulphites in the presence of the hyposulphites and sulphates, by M. A. Villiers. A convenient and rapid process is described for the research of the sulphites in the presence of the hyposulphites, which, like the former, liberate sulphurous acid by the action of the acids.—On the various sulphurous waters of Olette, Eastern Pyrenees, by M. Ed. Willm. A tabulated analysis is given of these waters on the assumption that all the carbonic acid is combined under the form of bicarbonates.—On synthetic acetonitril, by M. Louis Henry. The acetonitril obtained by the process here described is in every respect identical with that yielded by the dehydratation of acetamide.—On some cases of morphinomania in animals, by M. Ludovic Jammes. Several instances are mentioned of cats, and especially monkeys, acquiring a decided taste for the fumes of opium through association with opium-smokers in Camboja and China.

BERLIN.

Meteorological Society, April 5.—Prof. von Bezold, President, in the chair.—Prof. Upton, of Providence (U.S.A.), spoke on meteorological observations during eclipses of the sun. After discussing the phenomena which may theoretically be expected during an eclipse, he gave a full account of his own meteorological observations, already known to the readers of NATURE, which he made during the eclipses of May 6, 1883, on the island of Carolina, and which have already been published in full. He then discussed an explanation of the barometric variations during the period of totality which had been appended to the report of his observations as published in the *Zeitschrift für Meteorologie*, and expressed his dissatisfaction with the same. He is rather inclined to believe that the very evident fall in the atmospheric pressure before the period of totality is due to an outrush of air which is becoming cooled in the moon's shadow, and that the rise of pressure which is observed shortly after the period of totality is due to a compensating inrush of air. In conclusion Prof. Upton pointed out the importance of making meteorological observations in Prussia, especially as regards the variations of barometric pressure, during the total eclipse of August 19, along the line of total eclipse, and more particularly along the boundaries of the area of totality. In the discussion which followed, Prof. Spörer gave a description of the dense clouds of mist which he observed close to the earth during the eclipse of August 18, 1868, in India. Several days previously to the eclipse there had been a heavy fall of rain; the unclouded sun which rose on the 18th heated the surface of the earth and the dark stones, and then, as soon as the totality began, long, dense bands of mist made their appearance, and with the sharp breeze which was blowing gave rise to a very obvious sensation of coolness. Dr. Zenker then pointed out that, inasmuch as in Prussia the period of totality would occur in the very early morning hours, it would be out of place to expect any very marked variations of either temperature or barometric pressure. On the other hand, he considered that the meteorological observations should be directed more especially to an investigation of Bishop's rings, and of the alternating light and dark bands which precede and follow the stage of totality; they are probably interference fringes, and could be most efficiently recorded by means of photography. Prof. von Bezold laid stress on the importance of observations on the twilight which occurs during the eclipse, pointing out that specially favourable conditions for such observations will present themselves in Germany during this year. It is to be hoped that exact observations of the umbra, the penumbra, and the colours which simultaneously make their appearance will throw considerable light on the phenomenon. Prof. von Bezold intends to provide at the time for an adequately numerous participation in carrying out these observations.

STOCKHOLM.

Royal Academy of Sciences, March 9.—Sir Lowthian Bell, Bart., was elected a foreign corresponding member of the Academy.—On the species and varieties of the Coniferæ found in Scandinavia, by Prof. Wittrock. He also exhibited *Violæ Suecicæ exsiccatæ*, prepared by Messrs. L. M. Neuman, L. J. Wahlstedt, and S. Murbeck.—Report of a visit to some lakes and fresh-water basins in Sweden for the purpose of studying the flora, by Dr. N. A. Lundström.—Remarks on the fishes of the Mediterranean and the Sea of Japan, by Prof. F. A. Smitt.—A description of the collection of Japanese fishes in the zoological museum of the University of Upsala, by Herr E. Nyström.—Researches on the volume and composition of the gases resulting from the solution of iron in acids, by Herr H. Bäckström and Herr G. Paykull.—On the effects of hardening on the volume and composition of the gases evolved on the solution of steel in acids, by Herr G. Paykull.—On the number and congruences of the roots of the second order, by Dr. A. Berger.—On the integration of the differential equations for a material point movement, by Dr. G. Kobb.—The Secretary announced the acceptance of the following papers for publication in the Academy's Proceedings:—On the application of a numerical-theoretic formula for the transformation of a definite double integral, by Dr. A. Berger.—Contributions to the theory relating to the undulating movement in a gaseous body, by Prof. A. V. Bäcklund.—On allaktite from the Långban Mines, by Herr A. Sjögren.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

The Problem of Evil: G. D. Thompson (Longmans).—Die Natürlichen Pflanzenfamilien, Lief. 1 and 2: A. Engler and K. Prantl (Engelmann, Leipzig).—A Popular History of Astronomy during the Nineteenth Century, 2nd edition; A. M. Clerke (Black, Edinburgh).—Bulletin de la Société Impériale des Naturalistes de Moscou, No. 4, 1886, and No. 1, 1887 (Moscou).—Botany Notes, 2 parts, 3rd edition: A. Johnstone (Livingstone).—Organic Materia Medica: R, Bentley (Longmans).

CONTENTS

PAGE
Loomis's Contributions to Meteorology 1
The Game of Logic. By Alfred Sidgwick 3
Our Book Shelf:—
Stutzer: "Nitrate of Soda" 4
Letters to the Editor:—
Units of Weight, Mass, and Force.—**Rev. Edward Geoghegan** 4
Earthquake in the Western Riviera.—**Prof. Henry H. Giglioli** 4
The Boiling-Point and Pressure.—**M. F. O'Reilly** . . 4
A Sparrow chasing Pigeons.—**W. Harcourt Bath** . 4
The Royal Society Selected Candidates 5
The Paris Astronomical Congress 7
On Ice and Brines, II. By J. Y. Buchanan 9
The Classification of Spiders. By Rev. O. P. Cambridge 12
Christmas Island. By Capt. W. J. L. Wharton, F.R.S.; Capt. J. P. Maclear 12
Notes 13
Our Astronomical Column:—
The Orbit of the Minor Planet Eucharis 16
Astronomical Phenomena for the Week 1887 May 8–14 16
Geographical Notes 17
The Work of the Imperial Institute, II. By Sir Frederick Abel, C.B., F.R.S. 17
The Locomotor System of Star-fish. By Dr. George J. Romanes, F.R.S. 20
The Report of the Select Committee on Endowed Schools 21
University and Educational Intelligence 22
Scientific Serials 22
Societies and Academies 22
Books, Pamphlets, and Serials Received 24